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| *Human Perspectives ATAR Units 1 & 2* |

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Answers

Chapter 13 Reducing the chance of pregnancy and STIs

Questions 13.1

Recall knowledge

**1** State the purpose of contraception.

Answer*:* Measure taken to prevent a woman from having a child.

**2** Name the only type of contraception that is 100% effective.

Answer*:* Abstinence is the only form of 100% effective contraception.

**3** Describe the methods of detecting ovulation.

Answer*:* The rhythm method can be used where the female determines, based on her cycle, the time when it is not safe to have unprotected sexual intercourse. This is usually based on the woman having a regular 28-day cycle with ovulation falling on the 14th day of the cycle.

The temperature method can be used to predict ovulation as a woman’s temperature drops and then rises quickly when she ovulates.

The mucus method can detect ovulation, as there is a change in the cervical mucus from cloudy to clear on the day of ovulation.

**4** Describe the changes in body temperature that occur at the time of ovulation.

Answer*:* The body temperature drops and then rises sharply following ovulation.

**5 a** Explain why coitus interruptus is also called the withdrawal method.

Answer*:* Coitus interruptus is the withdrawal of the penis just before male orgasm so that ejaculation occurs outside the female body.

**b** Explain why it is an unreliable form of contraception.

Answer*:* It requires the male to know the sensations that occur just prior to ejaculation; it requires self-control to withdraw in that time; pre-ejaculatory fluids may still contain sperm within it.

**6** List the contraception methods of mechanical barriers.

Answer*:* Condom, femidom, diaphragm, cervical cap.

**7** Compare and contrast the diaphragm and cervical cap as methods of contraception.

Answer: Compare: Both are mechanical barriers, both can be used with a spermicide, both require a doctor to size them, and both must be inserted prior to sexual intercourse and left in place for 6 hours after intercourse.

Contrast: The diaphragm is larger and fits over the top of the vagina, whereas the cervical cap sits directly over the cervix.

**8** List the hormones that are used in contraception for males and females. For each hormone, state how it achieves its function.

Answer: Female: Oestrogen and progesterone. Oestrogen reduces the secretion of follicle stimulating hormone, so no follicles are matured in the ovary. Progesterone inhibits the secretion of luteinising hormone, preventing ovulation. It also increases the cervical mucus, making it harder for the sperm to enter the uterus and alters the lining of the endometrium, making it less receptive to implantation.

Males: Testosterone and progesterone. The progesterone blocks the production of FSH and LH that are needed to make sperm. Testosterone is used to replace the reduced production due to the presence of progesterone.

**9** What does the abbreviation ‘IUD’ stand for?

Answer*:* Intrauterine device.

**10** Describe how a vasectomy and tubal ligation prevent pregnancy.

Answer: A vasectomy involves removing a small piece of each vas deferens and the cut ends are then tied or sealed with heat. This prevent pregnancy because there is no longer a pathway for the sperm to take out of the testes. Tubal ligation involves removing a small piece of the uterine tubes, tying or heat sealing the open ends off. This prevent pregnancy as there is no pathway for the egg to move down the uterine tubes, to meet the sperm for fertilisation.

**11** List the factors that should be considered when selecting a method of contraception.

Answer*:* Reliability, side effects, convenience, availability, cost, permanency, personal choice including religious beliefs.

Apply knowledge

**12** Explain why it is important not to have sexual intercourse for a few days prior to ovulation in order to avoid pregnancy.

Answer*:* Sperm can live for up to 4 days in the female reproductive tract, so if sexual intercourse is undertaken prior to ovulation, there is a chance that there is viable sperm still in the female.

**13** Lactational amenorrhoea is the temporary infertility that occurs following the birth of a child if the mother is breastfeeding.

**a** Suggest why lactational amenorrhoea is an advantage for the mother and child.

Answer*:* It is advantageous to the mother as the hormones produced from breastfeeding naturally suppress ovulation, so she does not need to use other contraceptive methods. It can result in decreased bleeding after childbirth, and the uterus can return to normal size more rapidly. It is advantageous for the child as the mother is able to provide all available nutrients to the child through breastmilk, and not have reduced levels due to another pregnancy.

**b** Suggest why mothers who are not breastfeeding should not rely on lactational amenorrhoea.

Answer*:* If they are not breastfeeding, the hormones that supress ovulation are no longer being secreted, so it is likely that the female will ovulate and return to her normal cycles.

**14** State three reasons why pregnancies can still occur when condoms are used. For each reason, explain how it can lead to pregnancy.

Answer*:* The condom can break, resulting in ejaculation inside the female body.

The condom may have expired, and again, may break or tear, resulting in ejaculation inside the female.

The use of an oil-based lubricant may cause the condom to break.

The condom can slip off during intercourse.

**15** The contraceptive pill uses hormones to prevent pregnancy.

**a** Suggest why hormonal methods of contraception are one of the most effective methods of contraception for females.

Answer*:* Hormonal contraceptive methods limit/prevent ovulation, increase mucus to act as a barrier against sperm entry and reduce the effectiveness of the endometrium to hamper implantation. All these combine to make a hormonal contraceptive very effective.

**b** Discuss situations where this effectiveness is reduced.

Answer*:* The effectiveness of hormonal contraception is reduced if the female does not take the pill every day, or at the same time each day (mini-pill). Other medications can affect the effectiveness of hormonal contraception (antibiotic rifampin).

**16** Discuss the advantages of a hormone implant over hormone pills.

Answer*:* There is no need to remember to take the pill each day and a hormone implant can provide long-term contraception (up to three years).

**17** Suggest why some people do not agree with the use of the morning-after pill as a form of contraception.

Answer*:* The morning after pill, or emergency contraception, can be purchased over the counter at pharmacies, without a doctor’s prescription. It can be purchased without parental consent, meaning parents may not be aware their children are requiring contraception.

Questions 13.2

Recall knowledge

**1** List six sexually transmitted infections.

Answer*:* Chlamydia, gonorrhoea, hepatitis B, hepatitis C, syphilis, HIV, genital herpes

**2** Which STI has had the highest incidence in Australia in the past two decades?

Answer*:* Chlamydia

**3** List the symptoms of chlamydia in males.

Answer*:* A yellow, mucus-like discharge form the penis, a burning sensation when passing urine, inflammation of the epididymis.

**4** Describe the symptoms of genital herpes.

Answer*:* Blisters on the penis of males, and the labia and vagina of females. Flu-like symptoms or a rash. The blisters break forming ulcers that then develop scabs.

**5** Name the cause of genital warts.

Answer*:* Genital warts are caused by a virus, human papillomavirus (HPV).

**6** Describe the stages of HIV infection.

Answer*:* Stage 1 is acute infection during which the virus replicates quickly and the level of HIV in the patient is high. They may develop flu-like symptoms. This stage last two to three weeks.

Stage 2 is chronic infection and appears asymptomatic. The virus is still multiplying, but at a low rate. This stage can last up to 10 years.

Stage 3 is AIDS (acquired immune deficiency syndrome), which results from the person’s immune system being damaged to the degree they are not able to resist other infections.

**7** Explain why the use of condoms is effective in preventing the spread of HIV.

Answer*:* HIV is transferred when body fluid from one person enters the blood stream or comes into contact with the mucus membranes of another person. HIV can be transmitted through blood, seminal fluid, vaginal and cervical fluids. The use of a condom prevents the body fluids from coming into contact with the bloodstream or mucus membranes.

**8** Pubic lice and scabies both cause itching. Explain why they cause this symptom.

Answer*:* Public lice and scabies cause itching due to a reaction to the insects themselves, or to their faeces.

**9** Explain why gonorrhoea causes:

**a** pain during urination in males

Answer*:* The bacterium causes inflammation of the urethra, which result in burning and extreme pain when urinating.

**b** infertility in females.

Answer*:* The infection can be asymptomatic in females and therefore has a chance to spread to the uterine tubes, causing permanent blockage and infertility.

**10** Use a flow chart to summarise the stages of syphilis infection.

Answer:

Apply knowledge

**11** Suggest why young people are more at risk of contracting an STI than older people.

Answer*:* Young people are more likely to partake in risky behaviour including unprotected sexual intercourse or have taken alcohol or other drugs that impar decision making at a more critical time. Young people are more likely to have multiple sexual partners and are unlikely to be regularly tested. Some STIs are asymptomatic and can be transmitted without the person knowing they are infectious.

**12** Explain why it is difficult to isolate *Chlamydia trachomatis* even from people who are infected.

Answer*:* *Chlamydia trachomatis* infection is indistinguishable from a gonorrhoea infection. Both are common causes of other conditions including pelvic inflammatory disease and inflammation of the urethra.

**13** Discuss why chlamydia is more problematic and dangerous in females than males.

Answer*:* Chlamydia can be asymptomatic in females, meaning they do not know they have the infection and do not get appropriate treatment. The infection can lead to infertility, eye infection and arthritis. It is also linked to pelvic inflammatory disease (PID) or may lead to ectopic pregnancy. If the infected woman is pregnant there is a 70% chance the infection will be passed onto the foetus during birth. This can lead to the foetus suffering from conjunctivitis, nose and throat infections of pneumonia. There is a significantly increased risk of a premature birth or a stillbirth.

**14** Babies born to females who acquire genital herpes late in a pregnancy are more at risk of contracting neonatal herpes than those whose mother had herpes prior to her pregnancy. Discuss why this occurs.

Answer*:* If a woman acquires HSV late in her pregnancy the symptoms will be at the most severe, painful and distressing. This is because the woman does not have antibodies against the virus, so there is no natural protection for the baby during birth. A new HSV infection is active, so there is an increased possibility the virus will be present in the birth canal during delivery. Recurrent episodes are of a shorter duration and not normally as painful, due to the woman having antibodies against the virus. These antibodies are passed through the placenta, offering the baby protection against the virus.

**15** Discuss the relationship between HIV and AIDS.

Answer*:* HIV is a viral infection, where the virus replicates and destroys immune cells. AIDS develops after a few years of being infected with HIV and their immune system has been destroyed. A person could have HIV, but not AIDS.

**16** Discuss why contact tracing is more important for STIs than some other infections.

Answer*:* Many STIs are asymptomatic, so contact tracing is used to find people that may have the infection and to help treat them to prevent further spread of the infection. Contact tracing allows other people to be informed about their exposure and to be offered physical examinations and treatment.

Chapter 13 activities

Activity 13.2 Investigating the origin of HIV

Answer*:* A student’s account may include the following:

* AIDS was first observed in patients in the United States in 1981.
* The name acquired immune deficiency syndrome (AIDS) for the new disease was introduced in 1982.
* In 1983, Robert Gallo, working in the United States, and Luc Montagnier of the Pasteur Institute in Paris independently discovered that AIDS was caused by a virus that later became known as human immunodeficiency virus (HIV).
* HIV is a lentivirus, and lentiviruses are part of a larger group of viruses termed retroviruses.
* The term ‘lentivirus’ means ‘slow virus’, so named because they take such a long time to produce any adverse effects in the body.
* The most interesting lentivirus in terms of the investigation into the origins of HIV is the simian immunodeficiency virus (SIV), which affects monkeys.
* It is generally accepted that HIV is a descendant of a SIV because certain strains of SIVs have a very close resemblance to HIV-1 and HIV-2.
* HIV-1 corresponds to a type of *SIVcpz*, a strain of the SIV found in the subgroup of chimpanzees known as *Pan troglodytes*.
* HIV-2 corresponds to *SIVsm*, a strain of the SIV found in the sooty mangabey (also known as the white-collared monkey).
* It has been known for a long time that certain viruses can pass between species.
* The most commonly accepted theory for *SIVcpz* being transferred to humans is as a result of chimps being killed and eaten or their blood getting into the cuts or wounds of a hunter.
* Normally the hunter’s body would have fought off the SIV infection, but on a few occasions, it could have adapted itself within its new human host and become HIV-1.
* The fact that there were several different early strains of HIV, each with a slightly different genetic make-up (the most common of which was HIV-1 group M), would support this theory.

Other, more contentious theories include:

* that HIV can be traced to the testing of an oral polio vaccine called Chat, given to approximately 1 million people in the Belgian Congo, Rwanda and Burundi in the late 1950s.
* the contaminated needle theory – in Africa, to save money, one single syringe would have been used to inject multiple patients without any sterilisation between uses. This would have rapidly transferred any viral particles (within a hunter’s blood, for example) from one person to another, creating huge potential for the virus to mutate and replicate.
* the colonisation theory – during the late 19th and early 20th century, much of Africa was ruled by colonial powers. In areas such as French Equatorial Africa and the Belgian Congo, colonial rule was particularly harsh and many Africans were forced into labour camps where sanitation was poor, food was scarce and physical demands were extreme. These factors alone would have been enough to create poor health in anyone, so SIV could easily have infiltrated the labour force and taken advantage of their weakened immune systems to become HIV.
* the conspiracy theory – some believe that HIV is a ‘conspiracy’, or that it is ‘man-made’. They believe HIV was manufactured as part of a biological warfare program, designed to wipe out large numbers of Black and homosexual people.

Activity 13.3 Understanding the social consequences of vaccines for STIs

Answer*:* There are no correct or incorrect answers to this question. The important thing is to involve as many students as possible in considering possible advantages and disadvantages of such a program.

Chapter 13 review questions

Recall

**1 a** Define ‘contraception’.

Answer*:* Contraception refers to the prevention of conception; that is, birth control.

**b** List the methods of contraceptionavailable to both a man and a woman.

Answer:

• Abstinence

• Mechanical barriers

• Hormonal methods

• Spermicides and foams

• Sterilisation

• Intrauterine devices

• The rhythm method

• Coitus interruptus

**c** Draw up a table comparing each of the methods of contraception discussed in this chapter. In your table, include columns for reliability, advantages and disadvantages.

Answer:

|  |  |  |  |
| --- | --- | --- | --- |
| **Contraception** | **Reliability** | **Advantages** | **Disadvantages** |
| **Natural** |
| Periodic abstinence | Less than 75% effective | No side effects, free, acceptable to certain religious groups. | Poor reliability, relies on knowing ovulation times, no protection against STIs |
| Lactational amenorrhoea | 92 – 99% effective | No side effects, free, acceptable to certain religious groups. | Relies on fully breastfeeding a child, effective only with no menstruation and within the first six months of birth, no protection against STIs |
| Withdrawal | 76 – 85% reliable | No side effects, free, acceptable to certain religious groups. | Requires self-control, no protection against STIs |
| Spermicides | Less than 75% effective | Easy to use | Unreliable on their own, need to be used with a barrier method, no protection against STIs |
| Intrauterine devices | Effectives | Long lasting, easily reversed, may be effective emergency contraception | Must be inserted by a doctor, may cause bleeding at menstruation, no protection against STIs |
| **Mechanical barriers** |
| Diaphragm and cervical cap | 76 – 85% reliable | Does not affect menstrual cycle, can be used during menstruation, can be inserted ahead of time. | Difficult to insert, must be sized by a doctor, spermicide must be used in conjunction to improve reliability. |
| Condom | 76 – 85% reliable | Easy to buy, affordable, good protection against HIV and STIs | May affect spontaneity, partners need to be cooperative. |
| Femidom | 76 – 85% reliable | Can be put in place before sexual intercourse, stronger than male condoms, good protection against HIV and STIs | Placement needs practice, more expensive than male condoms.  |
| **Hormone contraception** |
| Combined pill | Very reliable,92 – 99% effective | Relatively affordable, regular periods, reduced incidence of ovarian and uterine cancer | Regular doctor’s prescription required, must be taken daily, possible side effects, no protection against STIs |
| Mini pill | 92 – 99% effective | Suitable for women who cannot take oestrogen | Must be taken at the same time every day, no protection against STIs |
| Implanon | Nearly 100% reliable | Lasts three years, relatively cheap,  | May cause menstrual irregularities, possible side effects, no protection against STIs |
| Depo-provera and Depo-ralovera | 92 – 99% effective | Convenient, periods stop | Injection cannot be reversed, delay in return to fertility when injections stop, possible side effects, no protection against STIs |
| Nuvaring | 92 – 99% effective | Daily pill not required | Regular placement and removal required, no protection against STIs |
| Sterilisation | Nearly 100% effective | Permanent | Permanent, requires surgery, specialist referral for female sterilisation, no protection against STIs |
| Morning-after pill | Can be 99% effective | Available over the counter | Emergency use only. Needs to be taken within 72 hours of sexual intercourse. No protection from STIs |

**2 a** Define ‘sexually transmitted infection’.

Answer*:* Sexually transmitted infections are infections that are transmitted by close body contact, usually with the genital organs.

**b** What types of organisms can cause STIs?

Answer*:* STIs can be caused by bacteria, viruses, protozoans, mites and insects.

**3 a** Outline the principle behind the rhythm method of birth control.

Answer*:* The rhythm method is based on periodic abstinence. Sexual intercourse should not occur from four days before to four days after ovulation, thus avoiding pregnancy. This works as sperm live for four days at the most. The woman must also be certain about when she ovulates. The principle of this method is to avoid intercourse at a time when an egg is likely to be available for fertilisation.

**b** Describe two ways in which the time of ovulation can be detected.

Answer*:* Ovulation can be detected by a body temperature drop followed by a spike. Ovulation may also be detected by monitoring the woman’s cervical mucus secretions. On the day of ovulation the woman’s mucus will be the clearest that it will get in the cycle.

**c** List advantages and disadvantages of the various ‘safe period’ methods as a means of birth control.

Answer*:* A comparison of each of the methods of contraception discussed is contained in the following table:

|  |  |  |
| --- | --- | --- |
| **Safe period method of contraception** | **Advantages** | **Disadvantages** |
| Rhythm method | Natural | • Most women do not have cycles that are exactly the same each month• Relies on the woman reliablydocumenting her menstrual cycle every month• Assumes that ovulation takes place in the middle of the cycle, which may not be the case• Difficult for some couples to abstain in the necessary time periods |
| Temperature method | • Natural• Can more accurately detect ovulation | • Relies on the woman reliably taking her temperature every morning• Difficult for some couples to abstain in the necessary time periods |
| Mucus method | • Natural• Can more accurately detect ovulation | • Relies on the woman reliablydocumenting and examining the vaginal mucus• Difficult for some couples to abstain in the necessary time periods |
| Symptothermal method | • Natural• Can more accurately predict the menstrual cycle because it uses a combination of three methods• Uses a fertility monitor, rather than the women’s judgement | • Difficult for some couples to abstain in the necessary time periods |

**4** Describe the advantages of diaphragms.

Answer*:* Advantages include that the woman has control of contraception, it can be in place before intercourse (does not disrupt ‘the moment’), and the woman’s hormone balance is not modified.

**5 a** Briefly outline the way in which hormonal methods of contraception work in females.

Answer*:* The two main types of hormonal contraceptive are the combined pill containing both oestrogen and progesterone substitutes, and the mini pill that contains only progesterone.

The combined pill works by thickening the cervical mucus to prevent sperm entering the uterus, inhibiting ovulation and changing the endometrial lining so that implantation is less likely.

The mini pill makes cervical mucus thicker so that sperm cannot enter the uterus. It also changes the lining of the uterus making it difficult for a fertilised egg to implant.

**b** List the various ways in which these hormonal methods can be administered.

Answer*:* The contraceptive hormones can be taken daily in a tablet form, given in a three-monthly injection or slowly released from an implant or from a vaginal ring.

**c** List the disadvantages of hormonal contraceptives.

Answer*:* Disadvantages include:

* No protection from STIs
* If in pill form woman must remember to take the pills
* Must be prescribed by a doctor
* Small risk of side effects, such as abnormal uterine bleeding between menstrual periods

**6** Which parts of the body are affected by infection with chlamydia in:

**a** males?

Answer*:* In males, an infection by chlamydia affects the urethra and is known as non-specific urethritis (NSU). If the infection goes untreated it can spread to the epididymis where it can cause inflammation that may lead to infertility if both testes are infected.

**b** females?

Answer*:* In females, an infection by chlamydia may cause inflammation of the uterus and uterine tubes. This is known as pelvic inflammatory disease (PID), but not all infected women will have such symptoms.

**7** Use a table to compare the causes, symptoms and treatment for gonorrhoea, syphilis, HIV, genital herpes and chlamydia.

Answer:

|  |  |  |  |
| --- | --- | --- | --- |
| **Disease** | **Cause** | **Symptoms**  | **Treatment**  |
| Gonorrhoea | A bacterium –*Neisseria gonorrhoeae* | In males, inflammation in the urethra results in a burning sensation in the penis and extreme pain when passing urine; later, a discharge of pus from the penis is evident.In females, there may be no early symptoms; usually there is no pain and any pus produced is taken as normal vaginal discharge. | Treatment with antibiotics; some strains are resistant to antibiotics and increasingly difficult to cure. |
| Syphilis | A bacterium –*Treponema pallidum* | The first symptom is one or more small sores, known as chancres, usually on the genital organs, but they may occur elsewhere (primary stage).A secondary stage may develop after a few weeks and a tertiary stage develops after many years. | Early treatment with antibiotics is usually successful. |
| HIV | A virus – human immunodeficiency virus | *Primary (acute) HIV* develops within 2-4 weeks of the virus infecting the body. Flu-like symptoms include fever, muscle aches, rash, coughing, weight loss, swollen lymph glands.*Clinical latent infection (chronic HIV)* is where the virus is present but symptoms or infections are not evident in many people. *Symptomatic HIV infection –* due to the destruction of immune cells, mild infections or chronic signs and symptoms occur including: fever, fatigue, swollen lymph nodes, weight loss, oral yeast infection, shingles, pneumonia.*Progression to AIDS (Acquired Immunodeficiency syndrome)*People in this stage are more likely to develop opportunistic infections or cancers | Antiretroviral therapy (ART) involves taking a combination of 3 or more anti-HIV drugs to combat the virus. ART does not cure HIV but helps people live longer and healthier lives. ART also reduces the risk of HIV transmission by reducing a person’s viral load to an undetectable level.  |
| Genital herpes | A virus – *Herpes**simplex* type 2 | In males, blisters appear on the penis, and may be associated with flu-like symptoms.In females, blisters appear on the labia and in the vagina, and may be associated with flu-like symptoms.The blisters break and form ulcers that in turn form scabs that eventually heal. | Treatment includes medication to reduce the pain, saline dressings to clean up the blisters, sexual abstinence during the period of eruption. |
| Chlamydia | A bacterium that lives within human cells – *Chlamydia trachomatis* | In males, inflammation of the urethra and possibly a discharge of pus; a burning sensation when passing urine.In females, symptoms are not obvious – some have inflammation of the pelvic organs. | Early treatment with antibiotics, although even with prolonged treatment the bacterium may not be completely eliminated. |

**8** HIV is a serious infection with significant ramifications for individuals and communities.

**a** Explain what is meant by ‘viral load’ and describe how viral load can be used as a test for HIV infection.

Answer*:* Viral load is used to describe the amount of HIV in the blood. It is used as a test for HIV infection because it gives an indication of the activity of the virus. The activity of the virus can be determined from the rate at which the virus replicates, and this acts a guide to the likelihood of damage to the immune system. Viral load tests are reported as the number of viral copies of HIV per millilitre of blood.

**b** Outline the stages of an infection with human immunodeficiency virus (HIV) that eventually develops into AIDS.

Answer*:* Approximately a month after infection with the human immunodeficiency virus (HIV), an infected person may suffer from flu-like symptoms. The individual’s immune system deals with this infection and they recover. However, even though the individual appears fit and well, the human immunodeficiency virus is destroying T-cells. The destruction of T-cells results in a weakening of the immune system. After some time, it may become so weak that it can no longer resist infection from bacteria, fungi or other viruses. Cancers are also likely to develop and the person now has AIDS.

**c** What complications are associated with AIDS?

Answer:

* Cancers, including lymphomas and Kaposi’s sarcoma
* Tuberculosis (TB)
* Infection with salmonella
* Candidiasis, which is a fungal infection also known as thrush
* Neurological complications, such as forgetfulness, confusion, depression and anxiety.

**d** Briefly outline the way in which HIV may be spread from person to person.

Answer:

* Unprotected sexual intercourse
* Sharing needles and syringes with an infected person
* Transmission of infected blood products, such as in a blood transfusion in a country where blood is not carefully tested
* Unsterilised implements used to piece the skin, such as in ear and body piercing, tattooing, and for dental and medical procedures
* From an infected mother to her child during pregnancy, childbirth or breastfeeding
* In rare cases when HIV-infected blood comes into contact with broken skin in sporting or other activities.

**e** What preventive measures are available to reduce the risk of infection by HIV?

Answer*:* To reduce the risk of infection the following preventive measures should be followed:

* a person may choose not to have sexual intercourse or to inject drugs
* a person should have protected sex with their chosen partner until they and their partner decide they will not have sex with any other person
* if a person wants to have sex with more than one person, or if their partner wants to have sex with others, then safe sex practices must be employed
* never share anything that may have blood on or in it, such as needles or syringes
* any open cuts or sores should be covered and not allowed to come into contact with human blood.

**9** Explain how an infant could be infected with:

**a** syphilis

Answer*:* The bacterium can cross the placenta of a pregnant infected woman. If infected, the developing foetus could go through all the stages of the disease before birth and suffer permanent damage to the heart, nervous system, joints and other organs.

**b** gonorrhoea.

Answer*:* The infection occurs in the cervix and vagina, and during birth an infected mother can pass the infection to her child. The gonococci may enter through the baby’s eyes, causing an acute eye infection that can lead to blindness.

Explain

**10** Explain the disadvantages of coitus interruptus as a method of birth control.

Answer*:* The major disadvantages of coitus interruptus as a contraceptive method:

* It is highly unreliable.
* The male must reliably recognise the sensations prior to ejaculation to know when to withdraw.
* It requires a great deal of self-control.

**11** Explain why some couples prefer not to use diaphragms or cervical caps as their method of birth control.

Answer*:* Diaphragms and cervical caps require a doctor to size them correctly and they also need to be used with a spermicide. They are not as effective as other methods of contraceptives, and do not offer protection against STIs and HIV.

**12** Explain how breastfeeding can prevent pregnancy.

Answer*:* Breastfeeding is used as a method of contraception as it relies on lactational amenorrhoea, the temporary infertility that follows the birth of a child.

**13** Explain how IUDs prevent pregnancy.

Answer*:* Hormonal IUDs work by releasing a hormone at a steady rate that makes the lining of the uterus – the endometrium – thin and unsuitable for the implantation of a fertilised egg. The hormone also stimulates the cervix to produce thick mucus that prevents sperm from entering the uterus and swimming towards the egg. In some women, the hormone from the IUD stops ovulation altogether.

Copper IUDs mainly work by affecting the movement of sperm and thus prevent them from moving through the uterus. In addition, they cause changes to the endometrium which, if an egg were to be fertilised, stop the egg from attaching to it.

**14** Explain how chlamydial infection can lead to infertility in women.

Answer*:* In females, a chlamydial infection may lead to infertility as continual inflammation of the uterine tubes may lead to the formation of scar tissue and blockage of the tubes. This blockage would stop sperm reaching the egg for fertilisation and, if both uterine tubes were blocked, the woman would be infertile.

Apply

**15** Compare and contrast vasectomy and tubal ligation.

Answer*:* A vasectomy is when the vas deferens in a male is cut and tied, and a tubal ligation is when the uterine tubes in a female are cut and tied.

**16** Discuss the factors that a person should consider before having a vasectomy or a tubal ligation.

Answer:

* Risks of the operation
* Both should be considered irreversible
* Age of the person involved
* The possibility of having a new partner later in life who wants children

**17** ‘People don’t die from HIV.’ Discuss this statement.

Answer*:* This is a true statement. The HIV virus does not kill people. However, the virus destroys the immune cells and results in a person getting AIDS. The person’s reduced immune system means that any other infectious disease can kill them because they do not have an immune system to fight against the pathogen.

**18** How do sexually transmitted infections differ from other communicable diseases? List as many differences as possible.

Answer*:* STIs differ from other communicable diseases in that:

* they are transmitted by close sexual contact
* they are not transmitted in the way that many communicable diseases are spread – by coughing, sneezing or other social contact
* one infection of the disease often does not provide resistance to further infection
* there is no readily available vaccine to protect against most of the infective agents.

**19** The graph below shows the number of new HIV and AIDS cases in Australia from 1984 to 2012. Suggest why the number of cases of AIDS has declined but there has been a less significant decline in new cases of HIV infection. (In 2019, the number of new diagnoses of HIV was 937.) Would you expect this same trend worldwide? Explain your answer.

Answer*:* In Australia, HIV transmission continues to occur primarily through sexual contact between men. HIV infection may be increasing due to a lack of available prevention services, the fact that people may not be aware of their HIV positive status, and because not all HIV positive people are receiving ART to reduce their viral load to an undetectable level.

Due to antiretroviral therapy (ART) many people are not developing AIDS.

This is not likely to be the same worldwide. A report from UNAIDS shows that while there is significant progress in stopping new HIV infections in children worldwide, the decline in new HIV infections in adults has stalled. In Eastern Europe and Central Asia there has been a 57% increase in annual new HIV infections from 2010 to 2015. The Middle East and North Africa have also seen an increase in new HIV infections. The access to ART, educational programs for young adults in high-prevalance areas, national condom programs and key population services in all countries is limited.

**20** Some people refer to STIs as ‘social’ diseases. Explain how this term may have arisen.

Answer: The term social disease probably arose at a time when sex was not discussed openly. It was considered to be a polite way of describing a sexually transmitted infection. People with such an infection may not have been socially acceptable to some members of society. Today the term social disease is more often used to describe a disease that is more prevalent in particular social groups.

Extend

**21** Explain why many millions of dollars are spent annually on research into birth control techniques. Give as many reasons as you can for the commercial and social importance of birth control.

Answer*:* The world is overpopulated and there are limited resources to support the large population. Birth control has resulted from the pressure on limited resources, families not being able to support many children financially, better health and hygiene, and women participating in the workforce. Birth control not only allows couples to limit the size of their families, it also allows them to decide when they will have their children. There are also many other reasons students may suggest.

**22** Rising population is a major problem in many countries. High birth rates occur in less-developed countries, rather than in developed countries such as Australia. Of the contraceptive measures described in this chapter, which do you think would be most suitable for use in a less-developed country? Which would be least suitable? Give reasons for your answers.

Answer*:* Most suitable:

* Abstinence
* Sterilisation, because it is a one-off procedure, the contraception does not have to be repurchased or reapplied and it is reliable (however, the rights of the individual are also paramount).

Least suitable:

* The rhythm method because it is not very reliable and requires education in its use
* Mechanical barriers because the correct size has to be prescribed and they have to be purchased
* The contraceptive pill, because it could be supplied by government and is very reliable, but it does need to be taken daily.

**23** Which partner in a sexual relationship should have the responsibility for contraception? How should this decision be arrived at by the couple? Write a short essay to argue your case.

Answer*:* In answering this question students may suggest that:

* both partners are responsible for contraception
* the decision is made through discussion and mutual consent
* the preferences of an individual be considered – may need to take in religious beliefs, health issues and so on.

**24** In Australia during 1988, nine people died from syphilis. Eight of these were people over the age of 65 and one was a child in her first year of life. From your knowledge of the progress of this disease, account for the marked age variation in these statistics.

Answer*:* The progress of syphilis is usually slow, and the tertiary stage is not likely to develop until late in life. The eight people who were over 65 probably died from the devastating complications associated with the tertiary stage. On the other hand, the child that died in her first year probably contracted the disease from her infected mother while in the womb, passed through all the stages of the disease before birth, suffered severe organ damage, and then struggled to survive once she was born.

**25** The incidence of syphilis in Australia remained relatively constant from 2004 to 2017 (see Figure 13.17), whereas the incidence of gonorrhoea increased greatly over the same period. Suggest as many reasons as you can to account for this difference in the incidence of the two diseases.

Answer*:* Answers will vary, but students may mention that gonorrhoea is more common than syphilis, making it more likely to spread. Because there are often no symptoms in females, they therefore do not seek treatment and inadvertently spread the disease.

**26** The infections discussed in this chapter are those that are commonly considered to be STIs. There are a number of other diseases that can be transmitted sexually, but that is not their only mode of transmission. Two such conditions are hepatitis B and molluscum contagiosum. For each of these infections, find out:

**a** the infective agent that causes the disease

**b** how the disease is transmitted – sexually and by other means

**c** the symptoms of the disease

**d** the treatment for the disease.

Answer:

|  |  |  |
| --- | --- | --- |
|  | **Hepatitis B** | **Molluscum contagiosum** |
| **a** The infective agent that causes the disease | A virus called hepatitis B | A poxvirus |
| **b** How the disease is transmitted – sexually and by other means | Spread by body fluids from infected people. Unprotected sexNewborns whose mothers have Hepatitis BPeople injecting drugs with shared needles.  | Direct skin-to-skin contactIndirect contact – sharing towelsAutoinoculation by scratching or shavingSexual transmission in adults |
| **c** The symptoms of the disease | Causes inflammation of the liver, abdominal pain and dark urine.  | Localised clusters of small warty bumps called mollusca.  |
| **d** The treatment for the disease. | There is no single treatment for this virus.A vaccine is available. Drink plenty of fluidsRest, avoid alcohol, eat a healthy diet | There is no single treatment for this virus.Physical treatment – picking out the soft white core, cryotherapyLaser ablationMedical treatments – antiseptics, wart paints with salicylic acid |